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ABSTRACT

Three papers, based on a study done with 160 Wisconsin fourth- and sixth-graders, are presented in an attempt to contribute to the psycholinguistic information needed in developing elementary English language learning programs. The first paper, "A Linguistic Ability Test for Elementary Grades," discusses a written test made up of 15 linguistic tasks which measure linguistic ability objectively and relate these to written discourse. The second paper compares and analyzes differences in discourse when children are asked to respond to pictorial stimuli ranked from concrete to abstract and are given preliminary instructions which vary. The third paper, based on the writing samples obtained from the pictorial-stimuli situation, describes the lexical and syntactic linguistic deviations made by the subjects. The data and linguistic variables are tabulated in the appendix. (JM)

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PAPER I

A Linguistic Ability Test for the Elementary Grades

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A Linguistic Ability Test for the Elementary Grades

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The purpose of this study was to measure objectively with a paper and pencil test the linguistic abilities of elementary school children and relate these abilities to their written discourse. The linguistic ability test (LAT) that was constructed consisted of 15 different tasks which were field-tested on 211 fourth and sixth graders. An example of one of the tasks is shown below:

List I contains a set of nonsense questions. List II has the answers to the questions. Before each question in List I write the letter of the answer for that question. One sentence in List II will be left over.

List I	List II
_____ 1. What did the klib hinkle?	A. A turfee was klibbed menitely.
_____ 2. How was a turfee klibbed?	B. The klib hinkled a snafrat.
_____ 3. Where did the klib hinkle?	C. The turfee was klibbed by a sneel.
_____ 4. Who klibbed the turfee?	D. The klib hinkled in a boofram.
	E. A turfee hinkled the klib's torp.

Do the same for Lists III and IV. One sentence in List IV will be left over.

List III	List IV
_____ 5. What did klib duhink?	F. Duhinks nac the ploes to klib.
_____ 6. When did klib plo?	G. Plo was klibbed very duhink.
_____ 7. How was plo klibbed?	H. Klib duhank the plo.
_____ 8. Who klibbed the duhink?	I. The duhink was klibben to the plo by nac.
	J. Klib ploded duhinkly.

Notice that certain critical words in both the questions and answers above are meaningless. For example, "What did the klib hinkle?" Even though this is a nonsense question it has a perfectly logical nonsense answer, namely, "The klib hinkled a snatfrat." Though one talks nonsense, one can apparently talk it using the king's English.

To answer the nonsense questions, the student must know something about his language system. The correct relationship between the questions and answers must be obtained from the function words and the structure of the language. That is, the meaning must be gotten from the noun markers, the helping verbs, the inflections that identify the form-class of words, and the position of words in the sentence.

All 15 of the tasks in the LAT were constructed in an attempt to measure the ability of elementary-aged children in the areas of manipulating language and in evaluating language as an object. We wanted to test the ability to think about language as a system, the ability to manipulate the structures and transformations that are part of the system. Thus, rather than test vocabulary, standard usage, comprehension, punctuation rules, and terminology, the student was asked to recognize, use, and evaluate phonemes, morphemes, words, word functions, form-classes, sentence constituents, and sentences. The 15 tasks measured the following specific abilities:

.28* I. To evaluate syntax holding the meaning constant.

.63 II. To distinguish probable English grapheme clusters from improbable English grapheme clusters.

.60 III. To determine pronoun referents.

.72 IV. To recognize a word in the S's lexicon, given a clue from

more or less predictable phoneme-grapheme correspondences.

.69 V. To transform a given English sentence to a synonomous sentence by changing word order and not introducing new content words.

.85 VI. To recognize morphemes as roots, prefixes, and suffixes.

.75 VII. To recognize form-class and function-class slots (positions) in sentences.

.70 VIII. To use the deletion transformation.

.60 IX. To recognize the phoneme equivalents of various English graphemes and grapheme clusters.

.79 X. To recognize the structures of various questions in order to produce the appropriate response structures.

.32 XI. To embed one base sentence in another base sentence to produce a well-formed transform sentence.

.65 XII. (1-8) To distinguish well-formed English sentences.

XII. (9-12) To recognize logical meaning relationships between elements of a sentence.

.68 XIII. To properly expand the transformational auxiliary of the verb phrase.

.42 XIV. To use unpredictable and rare orthographic patterns in spelling English words.

.38 XV. (1-6) To determine vowel and consonant letter frequency in English.

XV. (7-8) To determine function-word frequency in English.

* Hoyt Reliability of each section.

All the items in the test were multiple choice. In many cases the foils, or incorrect options, were provided to us by real live fourth graders whom we gave open ended tasks for which they had to produce a response. When, for example, they were asked to rewrite without changing the meaning, "A truck hit that light pole." by beginning with the words "That light pole..." the fourth graders gave the following answers:

That light pole fell down on the truck.
That light pole and a truck were hit.
That light pole hit a truck.
That light pole was hit by a truck.

The last answer is correct, but the wrong answers gave us the supply of foils we needed.

The construction of the test was also helped by the existence of other ideas and tests that could be adapted. For example, the idea for one type of item (section XII) came from the British Intelligence Scale being developed under the direction of Frank Warburton at the University of Manchester. Two other item types (Sections IV and VII) were adapted from the Modern Language Aptitude Test produced by John Carroll and Stanley Sapon for the Psychological Corporation. A third idea (Section XIV) came from George Bernard Shaw's word fish which he spelled ghoti. Other sections were creative ideas of the group involved in the test construction, or were new uses of the common multiple-choice format.

The test contained a total of 148 items and took one hour, 20 minutes time. Two rest periods of five minutes each were included. Ss marked their answers directly on the test booklet. The test was administered by means of a tape recording. The instructions for each task and the longer test

items were read to the students. The reason for recording most of the reading material was to overcome the reading difficulty that many fourth and sixth graders are hampered by. The tape recording was also effective in pacing the students through the test. The pacing helped them to attempt each item without wasting time on a very difficult item.

The students were instructed to answer every item. They were to guess if they were not sure. This "forced responding" seemed necessary to relieve them of the decision of whether they knew enough to attempt an answer. It also made the analysis of individual items more adequate statistically.

The Ss that were used to field-test the LAT were from two public elementary schools in Beloit, Wisconsin. 211 Ss were tested, about half of them fourth graders, half sixth graders and approximately equal numbers of males and females at each grade level. Eighteen of the students, or 8 1/2 percent were not Caucasian. The average IQ of the students as measured by the Otis Beta E Intelligence Test six months prior to the field-test was 104.6.

The Hoyt reliability coefficient of the test at fourth grade was .93, at sixth grade .95, for both grades, .94. The reliability of each of the 15 sections appears above at the point where the specific abilities are listed. Eleven of the 15 subsections had a reliability higher than .60. Fourth graders averaged 139 points (two points per correct answer) and sixth graders 171. Males averaged 149 points, females 162. Both the grade level difference and the sex differences were significant, grade at .001 level and sex at .02. When IQ was used as a covariate, the sex

difference in favor of females was still significant, but only at the .08 level. The means for the 160 Ss whose writing was also analyzed are shown in Table 2 of the Appendix.

These same Ss wrote in response to a picture stimuli. The collection of these writing samples will be described in the paper by Mr. Barganz. The writing samples were extensively analyzed and a total of 63 different tabulations were made of each sample. The measures, listed and described in Table 1 of the Appendix, included the number of words, sentences, clauses, T-units, nouns, adjectives, adverbs, sentence patterns, suffixes and so on. The score on the LAT was correlated with each of the writing sample measures. The highest of these correlation coefficients was .36. The pattern of the correlations showed that the LAT was marginally predictive of the quantity of writing. The higher the LAT score the higher the number of words, main clauses, subordinate clauses, sentences, sentence patterns, multi-clause T-units, nouns, adverbs, modals, infinitives, past tense verbs, suffixes, and the fewer the number of words in fragmentary and meaningless structures.

While the LAT could predict at a very low level (between .28 and .36) these quantity measures, none of the measures of the complexity of sentence structure correlated significantly with LAT. That is, the LAT could not predict complexity as measured by words/sentences, clauses/T-units, nouns/T-unit, determiners/noun, adverbs/T-unit, or adjectives/T-units.

When IQ score was correlated with each of the writing measures, it fared even less well. With IQ, one could predict neither quantity nor complexity of writing with any success.

The set of themes was rated independently on a 4-point scale by three people. These three raters were asked to rate each theme either good, above average, below average, or poor on the basis of its overall quality. They were to use their own criteria, i.e. we did not specify the basis for grading the themes. The raters did not know the Ss involved nor were they at all acquainted with the LAT.

The composite rating of each theme was correlated with the student's LAT score. This correlation was .73, showing that while LAT did not predict sentence complexity and only marginally predicted writing quantity, it was highly predictive of overall quality. IQ was compared to the theme rating and this correlation was .63, also predictive but not as highly as the LAT score. The correlation between IQ and LAT was .77 showing that each was measuring closely related abilities.

The results of the LAT study have changed our ideas about the relationship between complexity of writing and quality of writing. We had been on an extensive search for some kind of syntactic structure or combination of structures that effectively differentiated the good from the poor writer. But the difference in writers at the fourth and sixth grade apparently is not in the area of the syntax and sentence structure persent in the written discourse. The worst themes display the same kinds of structure as the good themes. There are usually fewer structures but again this is not the basic difference. The best predictor of discourse quality is measured by the kind of skills found in the LAT. This ability to manipulate the language, to deal with it as an object to be transformed and used, the ability to evaluate the word and sentence is what enables the writer to produce discourse that an adult will value.

P A P E R I I

An Analysis of Children's Writing Under Different Stimulus Conditions

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An Analysis of Children's Writing Under Different Stimulus Conditions

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The purpose of this study was to compare the differences in the written discourse of upper elementary students when the nature of the picture stimuli and the instructions were systematically varied. Two kinds of tabulations of the written discourse were made. On the one hand, a total of 63 linguistic variables in each discourse sample were counted. These linguistic variables included counts of words, sentences, clauses, T-units, nouns, verbs, adjectives, etc., and the computation of such indices as sentence length, clause length, determiners per noun, sentence types, and so on. The discourse samples were also rated in terms of overall quality by three raters. The linguistic variables and the rating were analyzed as a function of three factors; namely, instructions, color of picture stimuli, and abstractness of picture content.

Previous research has shown that variation in the stimuli for writing does have an effect. May and Tabachnick (1966) report that the degree of organization present in the stimulus will affect the creativeness of the product. For elementary grade level children it appears that the more non-objective a picture is, the better the creative response to it. Sharples (1968) points out that most writers suggest teachers find out through trial and error what materials are most suitable. When Sharples compared four stimuli: a picture, a poem, a sound, and an object, the picture and poem, which he felt possessed more organized representation, produced slightly but not significantly better themes. He concluded that

there were really no general criteria for selecting stimuli; since teaching climate and the background of the student were much more powerful variables.

The development of picture stimuli for the present experiment attempted to satisfy two needs. We wanted a controlled stimulus situation that would provide a sample of writing in a short period of time and without advance preparation on the part of the student. Secondly, we wanted to test the feasibility of various types of pictures and instructions that might be used with elementary-aged children.

One instruction provided specific directions about the task. It told Ss to notice people, shapes, objects, and details, and to tell what the picture meant, what was happening or would happen. The other instruction was more general and simply asked the student to write about the picture. The length and gross appearance of both instructions was approximately the same.

The other two variables tested were color and abstractness of the 20 pictures used. Abstractness of pictures was empirically determined by having 12 people independently rank the 20 pictures from concrete to abstract. The agreement among these raters was close and the interrater correlation averaged about .90. Even without defining the terms abstract and concrete, the dozen raters could pretty well agree on a rank-ordering of the pictures. The ten most abstract pictures were then compared to the ten most concrete pictures on all dependent variables.

Five of the concrete pictures were black and white and five were in color, and the same was true of the abstract pictures. A description of the 20 pictures is given below in a list which goes from concrete to ab-

stract. Note that all 20 pictures were different, and the presence or absence of color was the variable studied, along with the rated concreteness or abstractness of the pictures.

Picture No. 1; color photo: Two small girls about three years old are at a red drinking pump. One girl is pumping water while the other drinks. The background and setting are indefinite.

Picture No. 2; black and white photo: Three girls of different ages and height are standing in the foreground behind a wire fence. Their clothing and the wooden buildings in the field behind them reveal their impoverished existence.

Picture No. 3; black and white photo: A soldier in uniform is squatting to comfort a small crying boy. The soldier holds his rifle in one hand, the boy in the other. This is the entire photograph except for the hand of another man in the immediate background.

Picture No. 4; color photo: An outdoor market, photographed from above, offers an array of brightly colored fruit, vegetables, vendors, and customers. The market is set up before a beige stucco building with grille-work doors and semi-balconies. In one window someone is watering the plants on the ledge.

Picture No. 5; black and white photo: A Negro boy and a smaller white boy are walking down the sidewalk of a business district. The black boy has his arm around the shoulders of the white boy. In the background one man is surveying the window of a hat store; an older man with a cane is sitting on the doorstep next to him.

Picture No. 6; black and white photo: A young white woman, kneeling on the grass, is tying a paper plate flower hat on the head of a Negro child.

Picture No. 7; black and white photo: A dog, chained to a wooden chair, sits in front of a dresser which holds many photographs and a newspaper. Hanging on the wall above the dresser are a mirror, two more photographs, and scissors.

Picture No. 8; color photo: A boat containing four crew men is photographed at the moment it capsizes. The oars are either detached or out of control. One man is tossed overboard. The other three are in violent motion, trying to retain their hold on the boat.

Picture No. 9; color photo: A small girl in a long pink dress, her head bowed, stands in the grass among a variety of flowers. In the hazy background stands a large white, two-story mansion.

Picture No. 10; color painting: This is a color photo of Picasso's 1949 painting entitled Claude. A small boy is standing next to a toy horse.

Picture No. 11; color painting: This is a color photo of Picasso's 1957 painting entitled Children and Dog. On a bright yellow background are three human figures in green, blue, and red. At the bottom is a white animal.

Picture No. 12; black and white painting: This is a photo of Chagall's Winter Scene, in which two human figures, one holding an artist's palette, dominate. Rows of houses are in the background along with horse and sleigh, moon, and lamppost.

Picture No. 13; black and white painting: This is Picasso's painting of The Meal, showihg a mother in the center serving her two children who are seated at the table.

Picture No. 14; color painting: In Chagall's The Cat a man with two faces sits in the foreground before a window. On the edge is a yellow cat with a human face. Through the window one can see the Eiffel Tower, buildings, people, and an upside-down train.

Picture No. 15; color photo: In the middle of a gray iron ground is an orange glowing furnace opening. Four metal spikes are around the opening; two are connected by a bundle of wire.

Picture No. 16; black and white photo: On a plain background an intricate snailshell forms a pattern of dark and light curves.

Picture No. 17; color photo: This is an aerial photograph of a pavilion roof at Montreal's Expo '67. Shadows and light dramatize the overlapping wedges which radiate from a central tower, forming the roof. To the right are two red conical roofs.

Picture No. 18; color painting: In Chagall's Russian Village the larger forms are an animal and a man. Smaller figures include field workers, a row of houses, and a woman milking a cow.

Picture 19; black and white photo: This is a view from above of the swirling patterns made by water on sand and rocks. Near the bottom is a stray piece of wood.

Picture No. 20; black and white painting: In this modern painting by Roy Lichtenstein circular shapes and curved lines contrast with a pointed shape entering the picture like a bolt of lightening.

The collection of the writing sample took place in the students' usual language arts class. The Ss used were 80 fourth graders and 80 sixth graders in two schools in Beloit, Wisconsin. The average IQ of each grade level was about 106 as measured by the Otis. The discourse sample was obtained during a one-half hour session. Each S was given a blank booklet, one of the 20 pictures, and one of the two instruction sheets. The pictures and instructions were issued randomly within each of the eight classrooms that participated. Each S read the instructions to himself, studied the picture, and then wrote whatever discourse he could or would in response to the picture stimuli.

The discourse was collected from the students and then typed verbatim. From these verbatim typed copies all counts of sentences, words, nouns, and so on were made. Analysis of variance was then used to measure the significance of each factor; instructions, color, and abstractness, on each dependent variable.

The quality of discourse was rated by three independent judges who knew nothing of the Ss, the stimuli used, the instructions, or the variables in the experiment. Each rater had some past experience in judging the discourse of elementary and adult Ss. The raters judged the themes on overall quality, and the meaning of this "quality" was left up to them. The correlations among the three raters were .64, .66 and .80. Each independent factor was tested against the composite rating of all three raters.

The dependent measures were those 63 linguistic variables listed in Table 1 of the Appendix. Table 2 in the Appendix shows the means on each

variable for the groups according to whether they received specific or general instructions, color or black and white pictures, and abstract or concrete picture content. By studying Table 2, one can see that as a result of the two types of instructions, no differences were significant at the .01 level. The numbers of words, sentences, clauses, T-units, and so on were essentially the same for both groups, and no basic differences in complexity of writing occurred either.

The instructions were not effective in causing any major changes in the quantity or complexity of writing. The effect of color vs. black-and-white was significant for a number of variables. Several kinds of structures appeared more often in the themes written in response to black and white pictures. For example, black and white produced more clauses, especially subordinate noun and adverb clauses; it also resulted in more types of sentence patterns, more clauses per T-unit, more multi-clause T-units, more single-base transforms, more modals, more adverbs, especially adverbs of time, and more prefixes than did the color pictures. The color pictures, however, brought about more adjectives and participial phrases, and slightly longer clauses.

The responses to black and white pictures appeared to be in terms of more complexity and more diversity of structures. The color pictures seemed more often to result in description, probably since the dimension of color provided a discussable point and made it easier to describe.

Apart from color pictures lending themselves to description and black and white to a diversity of exposition, the value of the pictures seemed to be more or less determined by content. Pictures producing the

best themes were numbers 7, 5, 19, 10, 12, 16, 9, 8, and 15 while 14, 4, 1, 20 and 17 were not very satisfactory. Pictures which showed some action occurring that was not self-explanatory, or pictures with one or two central figures, and relatively uncluttered pictures seemed to produce the best writing. The action shown in a picture produced attempts to speculate on the causes and meaning of what was happening, while a relatively uncluttered picture allowed the child's descriptive efforts a degree of success.

The importance of content is borne out by the third variable, the concrete-abstract dimension. Abstract pictures were more difficult to write about and students tended to have trouble expressing themselves in fluid structures. Many fragments, false sentence starts, occurred and often students resorted to writing lists of nouns, tabulating what they saw in the abstract picture rather than writing <u>about</u> the picture.

The concrete pictures produced more adverbial clauses and more other adverbial modification than the abstract pictures. Such adverbial modification is indicative of the larger amount of story telling and explanation produced from the concrete pictures.

The composite rating of the overall quality of the themes showed that the quality of themes written under either general or specific instructions was exactly the same, 7.5 on the rating scale, which went from 3 points for the best theme to 12 for the poorest. The black and white pictures produced somewhat better themes than the color pictures (7.1 compared to 7.9) but this was not statistically significant. The concrete pictures produced better themes (7.2 compared to 7.8) than the

the abstract pictures but again the difference was not significant. Incidentally, the average rating of the themes written by females was significantly higher than males, 6.7 to 8.3. These differences were all in the direction predicted by the linguistic variables and in that sense reinforce the conclusions reached on the basis of the linguistic variables, and that is, that one can influence the complexity and quality of writing by the judicious selection of types of stimuli. But the extent to which this is possible is small compared to two other factors: one, the ability of the individual student including such factors as IQ, linguistic ability, and sex, and two, the specific content of the picture. Such picture qualities as unclutteredness, a tension or action of some kind that begs for explanation or speculation, and a topic that is within the life-scope of the student appropriate to his age and thought level, seem important to look for in stimuli for writing, especially at this upper elementary level.

To attempt to alter the quantity or quality or complexity of writing by merely telling them to write in this way or that was not effective in the present experiment. The students' "writing set" is much too powerful to be swayed by a few sentences.

As a class of objects, black and white pictures seem to be slightly superior to color, but the content of individual pictures will easily outweigh this factor. If color is present, the student will often include it in his descriptions. Depending on your purposes, this description of color by the student can either be seen as using up time that could be used to develop other ideas to write about, or on the other hand,

as a convenient handle for the uncertain student that will allow him some feeling of success.

The class of concrete pictures was slightly better as stimuli than the abstract, but it was comforting to learn that fourth and sixth graders could do pretty well with either. Some of the abstract pictures were difficult to write about and the problem often seemed to be the result of content which was strange to the student. But many pictures of an abstract nature do lead to good descriptive efforts.

References

May, F., & Tabachnick, B. Free Stimuli for Creative Writing. Elementary School Journal, 1966, 67, 88-94.

Sharples, D. Content of Creative Writing. Elementary School Journal, 1968, 68, 419-426.

P A P E R I I I

Linguistic Structures and Deviations for Children's Written Sentences

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Linguistic Structures and Deviations for Children's Written Sentences

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English language arts texts written for children and those written for prospective and experienced teachers generally have a "corrective" philosophical and pedagogical bias. Few, if any, of these instructional materials have a developmental bias based on children's linguistic and conceptual growth.

The purpose of this study is to inquire into children's written language at the fourth and sixth grade level and to describe the types of linguistic structures and deviations made by children at these grade levels. Ultimately, the information gained from this study will contribute to the psycholinguistic information needed to formulate the needs, objectives, and specifications of an elementary English language learning program.

The research objectives of this study are: (1) to analyze the linguistic structures and the linguistic deviations used by one-hundred and sixty (160) children in their written sentences, and (2) to compare

the analysis of linguistic structures in the children's writing with teacher ratings of their writing.

One-hundred and sixty children, grades four and six, were each given one of twenty (20) concrete-abstract scaled pictures and either specific or general directions for their written composition stimuli. The children were generally from working class families living in a medium-sized industrial Wisconsin city, population 35,199, one-hundred miles northwest of Chicago. Most of the children were white; however, about 8% of the subjects were Black. The mean IQ of the children was 106 with a standard deviation of 12.

The children in their classroom setting seemed as representative of industrial, American children as could be found in the Midwest. Our subjects were not representative of suburban America or university community America which has frequently been the case in other studies similar to this one.

Most studies in the area of children's linguistic structures have analyzed either oral or written discourse, some have analyzed both oral and written discourse (Strickland, 1962; Loban, 1963; Hunt, 1965; O'Donnell, 1967; Menyuk, 1969; and Golub, 1969). This study differs from those mentioned above in its attempt (1) to analyze constituent structures as well as embedded structures, (2) to describe and classify children's deviant linguistic structures, (3) to correlate the linguistic findings with results on a linguistic abilities test, (4) to correlate the linguistic findings with differing stimuli, and (5) to correlate the linguistic findings with teacher ratings of the children's writing. The children's oral

language was also analyzed as described above but that portion of the larger study will not be included in this paper. Also, a conscious attempt will be made to incorporate the results of this study in an elementary English language learning program.

Description and analysis of linguistic variables. Sixty-three (63) measures were tabulated for each of the 160 written samples. Each of the linguistic variables is described in Table 1. The brief descriptor preceding each variable is the code name used in this report. Not all of the sixty-three linguistic variables will be discussed in this paper, but rather those that show some statistically significant differences between grade level, sex, and teacher rating will be given primary consideration.

Table 2 shows the mean scores and indicates significant differences at the .10 and the .01 levels of significance for the groups listed. Table 3 describes the significant differences between grades four and six and between males and females.

Table 3 describes children's language growth patterns and deserves to be summarized. Our student writers, both boys and girls taken as a group, exhibit some distinctive linguistic features between fourth and sixth graders. In terms of fluency, fourth and sixth graders produce the same amount of words, given the same time limits and the same writing stimuli. However, fourth graders produce more sentences whereas sixth graders produce longer sentences. In a like pattern, fourth graders produce more T-units but sixth graders produce longer T-units by embedding more clauses. Fourth and sixth graders use approximately the same amount

of subordinate noun and adverb clauses; however, sixth graders used significantly more adjective clauses than did fourth graders. In the verb phrase, sixth graders used more modals than fourth graders but fourth graders used more verb types. Fourth graders also used more possessives in the noun phrase. Sixth graders used more participle phrases and more nouns than fourth graders. Sixth graders could also use adverbs of manner better than fourth graders. Fourth graders used more initial adverbs but sixth graders used more adverbs after the verb, they also used more adverbs per T-unit. Sixth graders used more participle -ing endings and more adjective endings than fourth graders.

The information gained here indicates that somewhere between the fourth and sixth grade children start to learn how to use adjective and adverb modification more effectively. Also, they are able, by the sixth grade, to use the modal along with past and present tense in the verb phrase. These same sixth graders, although their fourth grade brothers and sisters are as fluent as they, can embed subordinate adjective clauses more abundantly than the fourth graders. In learning the process of modification they are also able to modify sentence elements with more than one other sentence element.

Girls are more fluent than boys and for that reason seem to surpass the boys in syntactic fluency as well. Table 2 generally dramatizes this fact and points to the direction in which the boys will eventually "catch-up."

Description of syntactic and lexical deviations. The corrective bias of language arts text books written for students is not selective. In other words authors of these texts attempt to point out and to offer corrective exercises for the vast number of deviations from standard English which are possible for native speakers to make, as adults or children. This posed a methodological problem in our research since we could not tabulate the total universe of deviations possible in the English language. What we decided to do was to describe and categorize the most frequently recurrent deviations which fourth and sixth grade boys and girls make in their writing.

Based on a transformational description of English and our knowledge of children's written language performance, we first divided the subjects' deviation into two categories, (1) syntactic deviations and (2) lexical deviations. The category of syntactic deviations includes syntactic ambiguities, malformed sentences, and malformed constituents within sentences. The category of lexical deviations includes lexical ambiguities, malformed words, and malformed constituents within words or word groups. Obviously, the syntactic category deals mostly with grammatical deviations (not necessarily traditional usage); the lexical category deals with word choice and spelling deviations.

Tables 4, 5, 6, 7, and 8 deal with the syntactic and lexical deviations encountered in the children's written language analyzed in this study. Some conclusions can be drawn from these tables.

The syntactic deviations shown in Table 4 deserve serious consideration:

(1) In the total universe of deviations possible, the children

writers participating in this study used only twenty-two deviations, fourth graders only twenty of the twenty-two.

(2) The most frequent deviations can be listed as:

(a) Sentence sense deviations, (1 in Table 4).

(b) Proper noun distinction and capitalization deviations increases in sixth grade, (4).

(c) Expletive there transformation deviations increases in sixth grade, (5).

(d) Determiner deviations, (6).

(e) V-be omitted, decreases in sixth grade, (7).

(f) V-be form deviations, decreases in sixth grade, (8).

(g) Coordinate conjunction deviations, increases in sixth grade, (10).

(h) Tense marker deviations, increases in sixth grade, (11).

(i) Agreement deviations, (12).

(j) Possessive-plural-contraction marker deviations, decreases in sixth grade, (15).

(k) Comma fault (use of comma in sentences), (16).

(l) Redundancy, increases in sixth grade, (17).

(m) Singular-plural inversion, increases in sixth grade, (20).

(n) Form-class marker deviations, appears in sixth grade, (21).

(3) All of the syntactic deviations are related to explainable linguistic features of the written code. The linguistic concepts and linguistic performance are teachable to elementary children.

(4) The list furnished in Table 4 or in (2) above provides a very manageable list of deviations from which linguistic concepts and linguistic performance can be incorporated into an elementary written language learning program.

(5) Although fourth and sixth grades wrote the same number of words, given the controls of the study, the sixth graders wrote longer sentences. In tending to pack more ideas into a sentence, certain deviations remained a problem or grew in frequency. These are indicated in (2) above. On the other hand, certain deviations within kernel sentence constituents appear to be decreasing between fourth and sixth grade as indicated by numbers (7), (8), (9), (14), (15), and (19), in Table 4.

(6) The negative and the expletive transformations are not completely understood in the elementary grades, nor are form-class markers. There is indication that some simple concepts from transformational grammar can be taught at the fourth and sixth grade levels.

Lexical deviations also fall into interesting categories. A few remarks about these categories are needed:

(1) The problem of lexical ambiguities is obviously present in the fourth and sixth grades. These ambiguities are problems of vocabulary development and selection of words and not necessarily problems of spelling. Vocabulary study is necessary in an elementary language program.

(2) The spelling deviations seem to fall into four categories. These lists in Tables 5, 6, 7, and 8 indicate children in their own simple way do know how to "spell" a word, even though it might not always be the way their teachers and parents spell the word. The list called "scrambled graphames" is amazingly small. This list would indicate the words a child really could not spell or perhaps could not pronounce.

(3) The largest lists of spelling deviations fall under the categories of "additions--ommissions of graphemes" and "phoneme-grapheme-dialectic." The "phoneme-grapheme-dialectic" list represents, (1) words which the child possibly pronounces as indicated by his grapheme selection, or (2) words for which the child has selected logical but nonconventional graphemes to represent phonemes of words. In selecting words for the spelling deviations, if a word contained a deviation represented by column II and IV, for example, the word would be placed in column IV rather than in both columns. All four of these columns of "spelling deviations" are familiar to teachers. Should a teacher elect to order the spelling deviations of his students in these categories, both student and teacher can see instantly why the spelling mistake was made. With this technique, the students' orthographic problems can be approached on a cognitive level rather than on a rote-memory level.

(4) The lexical deviations are extremely interesting since they are

closely related to the child's cognitive development and illustrate the connection between thought and language. If such a list were kept for each child, the teacher would have a comparative and cumulative record of the concepts which a child can control in his oral language code but not in his written language code. Computer programs can be developed to store, order, and compare this data.

Correlation of linguistic variables to quality of writing. Table 2, rows (11), (12), and (13), gives the mean scores of the linguistic variables for the sets of themes rated high, average, and low by the three raters. Also, significant differences of high and low themes from the average are indicated. A summary of the information in rows (11), (12), and (13) indicate the following:

(1) Fluency, both in word and sentence count, is a major criterion of quality of writing. The number of T-units and the number of clauses are also predictors of quality of writing. However, the word length of sentences and the word length of T-units are not predictors of quality of writing.

(2) The difference in linguistic performance between average writers and good writers is not as striking as is the difference in linguistic performance between average and poor writers.

(3) Good writers are distinguishable from average writers by the good writers ability to use more of the following linguistic variables: (a) single-base transformations, (b) verb types,

(c) nouns and noun markers, (d) possessive markers, (e) prepositional phrases, (f) participle markers, (g) adverb markers, (h) past tense markers, and (i) derivational and inflectional suffixes.

(4) Poor writers are distinguishable from average writers by the poor writer's significantly less use of forty-seven (47) of the sixty-three (63) linguistic variables on Table 2.

The number of deviations in each theme was tabulated and then correlated with the rating of theme quality. This correlation between absolute number of deviations and theme quality was only .25. However, when a new measure was used, the number of deviations per number of words (a sort of error density measure), the correlation between error density and theme quality was significant at .64. Error density was also predicted by the LAT ($r = .60$). Error density and IQ correlated .52. Thus, an important aspect of theme quality is the number of deviations per amount written.

Summary and implications. The implications of this study will be stated in terms of needs for an elementary written language program:

(1) Since written language fluency is a primary given in written language learning, then a written language learning program must include instructional strategies for stimulating, maintaining, and increasing the flow of children's written language.

(2) Since longer sentences and T-units produced by the embedding of relative clauses is a feature of written language growth, then instructional strategies for teaching and using this linguistic process must be included in a written language learning program.

(3) Since expansion of the use of tense, mood, aspect, and voice in the verb string is an indicator of written language growth, then instructional strategies for teaching this linguistic process must be included in a written language learning program.

(4) Since the use of adjectival and adverbial modification is an indicator of written language growth, then instructional strategies for teaching this linguistic process must be included in a written language learning program.

(5) Since it is pedogogically impossible to correct for the total universe of deviations possible in written English language, only those deviations that are actually made by a given population of children need be taught.

(6) Since linguistic deviations made by fourth and sixth graders can be classified into two major categories, syntactic and lexical, then linguistic concepts and linguistic performance taught should emphasize these two major categories.

(7) Since the list of syntactic deviations contains no more than twenty to twenty-two deviations from standard structures, then a written language learning program should include an ordered instructional strategy for teaching their linguistic concepts and linguistic performances.

(8) Since the category of lexical deviations can be further divided into two subsets, (1) lexical ambiguity and (2) spelling deviation then two instructional strategies should be devised, one for teaching vocabulary and related concepts, the other for teaching written word-attack and spelling skills.

(9) Since spelling deviations divide into four general categories then instructional strategies for teaching spelling should reflect these categories.

(10) Since a child's concept (thought) growth is reflected in his lexical and syntactic growth patterns, then means of evaluating, storing, and contrasting these language and thought patterns in children written language should be devised by specialists in the computer and natural language.

References

Blount, N. S., Shelby L. Johnson, and Wayne C. Fredrick. A Comparison of the Writing of Eighth- and Twelfth-Grade Students. Technical Report No. 78, Wisconsin Research and Development Center for Cognitive Learning. Madison, Wisconsin: University of Wisconsin, April, 1969.

Golub, Lester S. "Linguistic Structures in Students' Oral and Written Discourse." Research in the Teaching of English. Champaign, Ill.: NCTE, Vol. 3, No. 1, Spring, 1969, pp. 70-85.

Hunt, Kellogg, W. Grammatical Structures Written at Three Levels. NCTE Research Report No. 3. Champaign, Ill.: NCTE, 1965.

Loban, Walter. D. The Language of Elementary School Children. NCTE Research Report No. 1. Champaign, Ill.: NCTE, 1963.

Menyuk, Paula. Sentences Children Use. Cambridge, Mass.: The M. I. T. Press, 1969.

O'Donnell, Roy C., William J. Griffin, and Raymond C. Norris. Syntax of Kindergarten and Elementary School Children: A Transformational Analysis. NCTE Research Report No. 8. Champaign, Ill.: NCTE, 1967.

Strickland, Ruth G. The Language of Elementary School Children: Its Relationship to the Language of Reading Textbooks and the Quality of Reading of Selected Children. Bulletin of the School of Education, Indiana University. Bloomington, Ind.: School of Education, Indiana University, Vol. 38, No. 4, July, 1962.

WRITTEN LANGUAGE II

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APPENDIX

OF

TABLES

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Table 1

LINGUISTIC VARIABLES

	Descriptor	Explanation of Variable
(1)	# Words	Number of words: The total number of words in the sample. This can be considered a measure of fluency. Contractions were counted as one word as were compound words.
(2)	# sent.	Number of sentences: The total number of sentences in the sample as defined by the subjects use of periods and capitalization.
(3)	Words per sent.	Number of words per sentence (sentence length): Ratio of the total number of words to the total number of sentences per sample.
(4)	# T-units	Number of T-units: The total number of T-units in a sample. A T-unit is defined as one main clause plus the subordinate clauses attached to or embedded within it.
(5)	# words per T-unit	Number of words per T-unit (T-unit length): Ratio of the total number of words to the total number of T-units for each sample.
(6)	T-units per sentence	Number of T-units per sentence (Number of T-units per sentence): Ratio of the number of T-units to the total number of sentences for each sample.
(7)	# clauses	Number of clauses: Total number of clauses, both main and subordinate per sample.
(8)	# clauses per T-unit	Number of clauses per T-unit: Ratio of the total number of clauses, both main and subordinate, to the total number of T units in each sample.
(9)	# sub. clauses	Number of subordinate clauses: Total number of subordinate clauses in the sample including subordinate noun, adjective, adverb and various other subordinate clauses.

Table 1 (continued)

LINGUISTIC VARIABLES

	Descriptor	Explanation of Variable
(10)	# words per clause	Number of words per clause (clause length): The ratio of the total number of words to the total number of clauses in each sample.
(11)	# words in frags.	Number of words in fragments: The average word length of a fragment.
(12)	# coord. T-units	Number of coordinated T-units: The total number of T-units joined by a conjunction, comma, or semi-colon. The total number of sentences subtracted from the total number of T-units.
(13)	# subord. noun clauses	Number of subordinate noun clauses: Noun clauses have the function common to a noun.
(14)	# subord. adj. clauses	Number of subordinate adjective clauses: Adjective clauses modify substantives.
(15)	# subord. adv. clauses	Number of subordinate adverbial clauses: adverbial clauses function as adverbs.
(16)	# other subord. clauses	Number of other clauses: clauses which were not easily classified as noun, adjective, or adverb clauses, such as "look like," "seems like".

Table 1 (continued)

LINGUISTIC VARIABLES

	Descriptor	Explanation of Variable
(17)	# multi-clause T-units	Number of multi-clause T-units: Total number of T-units containing a main clause and one or more subordinate clauses.
(18)	# T-units patterns	Number of T-unit patterns: The total number of unique T-unit patterns in a sample as determined by V-t, V-i, V-l, V-b patterns of prediction in the verb phrase.
(19)	# single base trans.	Number of single-base transformations: The number of sentences expressed as negative, questions, emphatic, imperative, expletive, or passive voice.
(20)	# modals	Number of modals: The total number of modal auxiliaries (will, would, shall, should, must, may, might, can, could, ought to, have to, used to) used in a sample.
(21)	# be and have forms	Number of be and have forms: The total number of past or present participles preceded by a form of be or have in the verb phrase.
(22)	# infin.	Number of infinitives: The total number of infinitives in a sample.
(23)	# coord. verbs	Number of coordinated verbs: The total number of finite verbs joined by a coordinating conjunction or a comma to another verb and taking the same subject.
(24)	# verb types	Number of verb types: The total number of unique verbs in a sample.

Table 1 (continued)

LINGUISTIC VARIABLES

	Descriptor	Explanation of Variable
(25)	# nouns	Number of nouns: The total number of nouns, gerunds, and personal pronouns in the sample.
(26)	# deters.	Number of determiners: The total number of determiners, a, an, the, ordinal and cardinal numbers.
(27)	# qualifs.	Number of qualifiers: The total number of qualifiers such as much, more, some, any, etc.
(28)	# adjs.	Number of adjectives: The total number of adjectives in the sample.
(29)	# poss.	Number of possessives: The total number of possessives including pronouns and proper nouns.
(30)	# advs. within NP's	Number of adverbs: The total number of adverbs which were part of a noun phrase, including those of time, place, manner, comparison, degree, negation, conjunction, cause, condition, and probability.
(31)	# coord. nouns	Number of coordinated nouns: The total number of compound subject or object noun phrases, as linked by conjunction, comma, or semi-colon.
(32)	# poss. ends	Number of possessive endings: The total number of possessives formed by adding "'s" to a noun phrase.

Table 1 (continued)

LINGUISTIC VARIABLES

	Descriptor	Explanation of Variable
(33)	# part. phrases	Number of participial phrases: In written samples, the total number of participles which took a complement (part + NP). In oral samples, all participles.
(34)	# prep. phrases	Number of prepositional phrases: The total number of prepositional phrases with the structure prep + NP.
(35)	# nouns per T-unit	Number of nouns per T-unit: The ratio of the total number of nouns to the total number of T-units.
(36)	# deters. per noun	Number of determiners per noun: The ratio of the total number of determiners to the total number of nouns.
(37)	# adjs. per noun	Number of adjectives per noun: The ratio of the total number of adjectives to the total number of nouns.
(38)	# relative clauses	Number of relative clauses: The total number of subordinate adjective clauses introduced by a definite relative pronoun (who, whose, which, what, that).
(39)	# adverbs of time	Number of adverbs of time: The total number of adverbs which answer the question, "when?", such as when, then, ago, etc.
(40)	# adverbs of place	Number of adverbs of place: The total number of adverbs which answer the question, "where?", such as there, up, to go home, and to have something on, etc.

Table 1 (continued)

LINGUISTIC VARIABLES

	Descriptor	Explanation of Variable
(41)	# adverbs of manner	Number of adverbs of manner: The total number of adverbs that answer the question "how?", such as well, quickly, happily, etc.
(42)	# other adverbs	Number of other adverbs: The total number of adverbs indicating degree ("greatly"), probability ("probably"), conjunction ("however"), negation ("not"), condition ("if"), cause ("because"), comparison ("better"), and the expletive "there".
(43)	# total adverbs	Number of total adverbs: The total number of adverbs or adverbial phrases, regardless of function and including those under number 30 (adverbs within NP's).
(44)	# initial adverbs	Number of initial adverbs: The total number of adverbs which occurred as the first word of a T-unit.
(45)	# adverbs before verb	Number of adverbs medial before the verb: The total number of adverbs, except those in the initial position, which occurred before the main verb in the T-unit.
(46)	# adverbs after verb	Number of adverbs medial after the verb: The total number of adverbs, except those in the final position, which occurred after the main verb of the T-unit.
(47)	# final adverbs	Number of final adverbs: The total number of adverbs which occurred as the last word in a T-unit.
(48)	# adverbs per T-unit	Number of adverbs per T-unit: The ratio of the total number of adverbs to the to the total number of T-units.

Table 1 (continued)

LINGUISTIC VARIABLES

	Descriptor	Explanation of Variable
(49)	# prefixes	Number of prefixes: The total number of separable prefixes, such as un-, pre-, con-, etc.
(50)	#-ing verbs	Number of -ing verbs: The total number of verbs having the suffix -ing.
(51)	# part. -ed ends.	Number of participial -ed endives: The total number of participles having either the ending "-ed" or -en".
(52)	# part -ing ends.	Number of participial -ing endings: The total number of participles having the ending "-ing", but not including finite verbs with -ing suffixes.
(53)	# noun ends.	Number of noun endings: The total number of nouns formed by the addition of a suffix to another form-class word, such as meaning, description, etc.
(54)	# adj. ends.	Number of adjective endings: The total number of adjectives formed by adding a suffix to another form-class word, such as descriptive, beautiful, worthy, etc.
(55)	# plural ends.	Number of plurals: The total number of plurals formed by adding -s or -es to a noun or noun equivalent.
(56)	# part.-adj. ends.	Number of participial adjective endings: The total number of participial adjectives formed by adding a suffix to a participle or adjective, as in a turning wheel.

Table 1 (continued)

LINGUISTIC VARIABLES

	Descriptor	Explanation of Variable
(57)	# adverb ends.	Number of adverb endings: The total number of adverbs formed by adding a suffix to another form-class word, such as quick<u>ly</u>, like<u>wise</u>, side<u>ways</u>, etc.
(58)	# past ends.	Number of past forms: The total number of past forms of finite verbs formed by adding -ed.
(59)	# total suffixes	Number of total suffixes: The total number of suffixes (endings) including plurals; possessives; participle -ed, -en, and -ing endings; noun, adjectives and adverb endings; participial adjective endings; and past form endings.
(60)	# suffixes per words	Number of suffixes per words: The ratio of the total numbers of suffixes to the total number of words.
(61)	# form-class words	Number of form-class words: The total number of nouns, verbs, adjectives, and adverbs.
(62)	# function words	Number of function words: The total number of all words other than form-class words, including prepositions, determiners, qualifiers, participles, modals, conjunctions, etc.
(63)	# form wds. per func. wds.	Number of form words per function words: The ratio of the total number of form-class words to the total number of function words.

Table 2

Independent Variables	(1) #words	(2) #sent.	(3) #words per sent.	(4) #T-units	(5) #words per T-unit	(6) #T-units per sent.	(7) #clauses
Written Sample							
(1) 4th grade	127.8	11.5*	11.2	13.6	9.5	1.19	18.3
(2) 6th grade	124.7	9.7	13.0**	11.6	11.7**	1.21	17.3
(3) Male	105.0	8.8	12.9	10.6	10.7	1.23	14.7
(4) Female	147.5**	12.4**	12.4	14.7**	10.6	1.19	20.9**
(5) Specific	124.3	10.4	12.7	12.1	11.0	1.19	17.3
(6) General	127.2	10.8	12.6	13.1	10.4	1.23	18.4
(7) Concrete	130.5	10.8	12.8	13.2	10.6	1.25	18.7
(8) Abstract	122.0	10.3	12.5	12.0	10.8	1.17*	17.0
(9) Bl. & White	133.9	11.0	13.1*	13.2	10.9	1.21	19.2*
(10) Color	118.6	10.2	12.2	11.9	10.4	1.19	16.4
(11) High Themes	176.6**	15.5**	11.8	17.7**	10.6	1.13	24.8**
(12) Average Themes	129.9	10.6	13.0	12.6	10.9	1.20	18.5
(13) Low Themes	68.2**	5.6**	12.6	7.5**	10.1	1.29**	9.4**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64 - 76 are LAT Section Variables)

Table 2
(continued)

Independent Variables	(8) #clauses per T-unit	(9) #sub. clauses	(10) #words per clause	(11) #words in frags.	(12) #Coord. T-units	(13) #subord. noun clauses
Written Sample						
(1) 4th grade	1.28	4.6	7.4	3.4	2.4	1.30
(2) 6th grade	1.57**	5.7*	7.8	2.2	2.5	1.40
(3) Male	1.44	4.1	7.7	3.3	2.1	.99
(4) Female	1.45	6.2**	7.5	2.3	2.7	1.61*
(5) Specific	1.46	5.1	7.7	2.9	2.3	1.28
(6) General	1.43	5.3	7.4	2.7	2.5	1.33
(7) Concrete	1.48	5.5	7.2	1.9	2.7	1.46
(8) Abstract	1.42	4.9	7.9*	3.7*	2.2	1.24
(9) Bl. & White	1.54**	6.0*	7.8	2.7	2.5	1.55*
(10) Color	1.36	4.4	7.3*	2.9	2.4	1.05
(11) High Themes	1.43	7.1	7.5	1.2	2.3	1.97
(12) Average Themes	1.50	5.8	7.6	2.5	2.3	1.33
(13) Low Themes	1.37	2.0**	7.6	5.1**	2.8	.56**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(14) #subord. adj. clauses	(15) #subord. adv. clauses	(16) #other subord. clauses	(17) #multi-clause T-units	(18) #T-unit patterns	(19) #single-base trans.	(20) # of modals
Written Sample							
(1) 4th grade	.79	1.21	1.35	4.00	6.66	2.78	1.84
(2) 6th grade	1.44**	1.25	1.66	4.41	6.87	2.75	2.64*
(3) Male	.96	.96	1.24	3.38	6.11	2.60	1.85
(4) Female	1.26	1.50*	1.77	5.04**	7.42**	2.92	2.63*
(5) Specific	1.06	1.04	1.66	4.08	6.79	2.83	1.96
(6) General	1.16	1.43	1.35	4.34	6.75	2.70	2.51
(7) Concrete	1.07	.94*	1.40	4.35	6.96	2.88	2.49
(8) Abstract	1.15	1.53	1.61	4.06	6.57	2.65	1.99
(9) Bl. & White	1.07	1.02*	1.76	4.80*	7.27*	3.21*	2.61*
(10) Color	1.15	1.44	1.25	3.61	6.26	2.31	1.86
(11) High Themes	1.49	1.54	1.95	5.92	8.28	3.92*	2.77
(12) Average Themes	1.22	1.49	1.77	4.60	7.24	2.70	2.70
(13) Low Themes	.51**	.38**	.51**	1.67**	4.26**	1.71**	.74**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(21) # be & have forms	(22) #infin.	(23) # coord. verbs	(24) # verb types	(25) #nouns	(26) #deters.	(27) #qualifs.
Written Sample							
(1) 4th Grade	2.84	.68	.76	9.8*	37.5	15.2	1.88
(2) 6th Grade	2.87	.88	.92	7.5	36.9	16.0	1.54
(3) Male	2.94	.50	.55	6.2	30.9	13.7	1.36
(4) Female	2.77	1.05*	1.14**	11.1**	43.5**	17.6**	2.05*
(5) Specific	3.15	.83	.81	8.3	36.2	16.2	1.59
(6) General	2.56	.73	.88	8.9	38.1	15.0	1.83
(7) Concrete	3.02	.84	.90	9.0	37.5	16.1	1.54
(8) Abstract	2.69	.71	.79	8.3	36.8	15.2	1.88
(9) Bl. & White	3.14	.81	.92	9.3	39.0	16.1	1.89
(10) Color	2.58	.74	.76	8.0	35.3	15.2	1.53
(11) High Themes	3.62	1.23	1.38	12.6**	51.2**	21.9**	2.33
(12) Average Themes	2.84	.78	.85	8.2	38.1	15.4	1.70
(13) Low Themes	2.13**	.31**	.28**	5.6**	21.0**	9.9**	1.10**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(28) #adje.	(29) #poss.	(30) #advs.	(31) #coord. nouns	(32) #poss. ends.	(33) #part. phrases	(34) #prep. phrases
Written Sample							
(1) 4th Grade	4.7	2.34*	.81	2.18	.45	.18	9.16
(2) 6th Grade	5.5	1.48	.97	2.48	.22	.34*	9.88
(3) Male	4.5	1.54	.57	1.94	.26	.21	8.31
(4) Female	5.7*	2.28*	1.21**	2.71*	.41	.30	10.73*
(5) Specific	5.3	1.89	.82	2.44	.39	.26	9.60
(6) General	4.9	1.93	.96	2.21	.29	.25	9.44
(7) Concrete	5.1	2.29*	.90	1.93	.40	.26	9.19
(8) Abstract	5.1	1.53	.89	2.73*	.28	.25	9.85
(9) Bl. & White	4.9	2.11	.80	2.34	.35	.16	10.19
(10) Color	5.3	1.70	.99	2.31	.33	.35*	8.85
(11) High Themes	7.1	3.30**	1.21	2.56	.72*	.23	14.10**
(12) Average Themes	5.1	1.80	.99	2.40	.26	.26	9.48
(13) Low Themes	3.1**	.74**	.38**	1.92	.13*	.28	5.03**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(35) #nouns per T-unit	(36) #deters. per noun	(37) #adjs. per noun	(38) #relative clauses	(39) #adverbs of time	(40) #adverbs of place	(41) #adverbs of manner
Written Sample							
(1) 4th Grade	2.86	.45	.13	.73	1.92	1.86	.89
(2) 6th Grade	3.42**	.43	.15	1.39**	1.36	1.77	1.44*
(3) Male	3.11	.47*	.15	.89	.86	1.55	.80
(4) Female	3.16	.41	.14	1.23	2.42**	2.09*	1.53**
(5) Specific	3.16	.47*	.15	1.04	1.30	1.76	1.15
(6) General	3.11	.41	.13	1.08	1.99*	1.88	1.18
(7) Concrete	3.30	.44	.13	1.00	1.90	2.01	1.21
(8) Abstract	2.97*	.45	.15	1.11	1.39	1.63	1.11
(9) Bl. & White	3.20	.42	.12	1.10	2.05*	1.98	1.16
(10) Color	3.08	.46	.16*	1.20	1.24	1.66	1.16
(11) High Themes	3.00	.44	.14	1.44	2.54	2.72	1.69
(12) Average Themes	3.22	.42	.14	1.13	1.73	1.78	1.24
(13) Low Themes	3.10	.48	.15	.51**	.56**	1.00**	.46**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(42) #other adverbs	(43) #total adverbs	(44) #initial adverbs	(45) #adverbs before verb	(46) #adverbs after verb	(47) #final adverbs	(48) #adverbs per T-unit
Written Sample							
(1) 4th Grade	5.04	9.7	2.58**	1.60	4.00	1.54	.68
(2) 6th Grade	6.31*	10.9	1.54	2.10	5.68**	1.56	.96**
(3) Male	4.54	7.8	1.68	1.38	3.46	1.24	.78
(4) Female	6.81**	12.9**	2.44*	2.33**	6.21**	1.86*	.87
(5) Specific	5.39	9.6	1.85	1.55	4.71	1.49	.80
(6) General	5.96	11.0	2.26	2.15*	4.96	1.61	.84
(7) Concrete	6.65**	11.8**	2.16	2.42*	5.64**	1.75	.91**
(8) Abstract	4.70	8.8	1.95	1.69	4.04	1.35	.74
(9) Bl. & White	6.18	11.4*	1.80	2.34*	5.26	1.65	.88
(10) Color	5.18	9.2	2.31	1.77	4.41	1.45	.77*
(11) High Themes	7.85	14.8	3.10	2.77	6.95	1.95	.87
(12) Average Themes	6.05	10.8	1.98	2.00	5.21	1.62	.88
(13) Low Themes	2.72**	4.7**	1.18**	.62**	1.95**	1.00**	.66**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(49) #prefixes	(50) #-ing verbs	(51) #part. -ed ends.	(52) #part. -ing ends.	(53) #noun ends.	(54) #adj. ends.	(55) #plural ends.
Written Sample							
(1) 4th Grade	.09	2.09	.50	.70	.63	1.23	4.79
(2) 6th Grade	.15	1.89	.53	1.06*	.94	1.78*	4.86
(3) Male	.15	1.94	.46	.81	.61	1.13	4.31
(4) Female	.09	2.04	.56	.95	.95	1.88**	5.34
(5) Specific	.09	2.20	.56	1.04	.64	1.48	4.86
(6) General	.15	1.78	.46	.73	.93	1.53	4.79
(7) Concrete	.15	2.04	.51	.94	.84	1.59	4.63
(8) Abstract	.09	1.94	.51	.83	.73	1.41	5.03
(9) Bl. & White	.23**	2.15	.65*	.90	.73	1.53	5.04
(10) Color	.01	1.83	.38	.86	.84	1.48	4.61
(11) High Themes	.21	2.10	.79	1.21	1.31	2.26	6.05
(12) Average Themes	.10	2.16	.50	.82	.77	1.57	4.79
(13) Low Themes	.08	1.51	.26*	.69	.28**	.59**	3.67*

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(56) #part.-adj. ends.	(57) #adverb ends.	(58) #past ends.	(59) #total suffix	(60) #suffixes per words	(61) #form-class words	(62) #function words
Written Sample							
						68.9	55.8
(1) 4th Grade	.29	.46	1.43	12.7	.10	70.4	57.4
(2) 6th Grade	.38	.64	.86	13.3	.11		
						57.7	47.3
(3) Male	.35	.44	.70	11.2	.11	81.5**	65.9**
(4) Female	.31	.66	1.59*	14.8**	.10		
						68.2	55.9
(5) Specific	.33	.48	1.00	13.1	.11	71.0	57.2
(6) General	.34	.63	1.29	12.9	.09		
						72.0	58.4
(7) Concrete	.34	.70*	1.10	13.3	.10	67.2	54.7
(8) Abstract	.33	.40	1.19	12.7	.11		
						73.8	60.1
(9) Bl. & White	.34	.56	1.15	13.7	.10	65.4	53.0
(10) Color	.33	.54	1.14	12.2	.10		
						95.9**	80.7**
(11) High Themes	.56*	1.13**	2.82**	19.2**	.11	72.2	57.7
(12) Average Themes	.22	.46	.80	12.5	.10	37.9**	30.0**
(13) Low Themes	.33	.15**	.18**	7.9**	.10		

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(63) #form wds. per func. wds.	(64) sect. II RIMMEL	(65) sect. III IT-HE	(66) sect. IV KWICKLE	(67) sect. V N is H	(68) sect. VI UN-FUL	(69) sect. VII FUNCTION
Written Sample							
(1) 4th Grade	1.29	15.7	4.3	5.9	6.4	22.4	7.9
(2) 6th Grade	1.27	16.6	6.1**	7.6**	10.0**	25.7**	11.9**
(3) Male	1.25	15.7	4.6	5.6	7.7	23.0	9.7
(4) Female	1.31	16.6	5.8**	6.8	8.7*	24.9	10.0
(5) Specific	1.26	16.8	5.4	7.3	8.4	24.2	10.4
(6) General	1.30	15.5	5.0	6.1	7.9	23.8	9.3
(7) Concrete	1.29	16.7	5.4	6.8	8.4	24.6	10.1
(8) Abstract	1.27	15.7	5.0	6.6	8.0	23.5	9.7
(9) Bi. & White	1.30	17.2*	5.5	7.8**	8.3	24.2	10.6*
(10) Color	1.26	15.1	4.9	5.7	8.1	23.8	9.1
(11) High Themes	1.23	19.2	6.7	10.0**	9.9	28.2	13.2
(12) Average Themes	1.30	17.3	5.5	6.6	8.6	24.6	10.3
(13) Low Themes	1.30	10.8**	3.1**	3.6**	5.5**	18.7**	5.5**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	(70) sect. VIII DELETE	(71) sect. IX SOUNDS	(72) sect. X KLIB	(73) sect. XII BLANKS	(74) sect. XIII GAMES	(75) total LAT	(76) LAT minus 4 sects.
Written Sample							
(1) 4th Grade	10.3	8.0	7.1	11.1	25.2	148.3	123.9
(2) 6th Grade	11.4*	8.9	9.8**	13.2**	26.7*	174.6**	146.4**
(3) Male	10.2	7.9	8.2	12.0	25.7	155.8	131.3
(4) Female	11.5*	9.0	8.7	12.2	26.2	167.2*	139.1
(5) Specific	11.0	8.7	8.5	12.7	26.0	165.3	138.3
(6) General	10.7	8.2	8.4	11.5	25.9	157.6	132.1
(7) Concrete	10.8	8.5	8.7	12.3	26.6	163.6	137.7
(8) Abstract	10.8	8.4	8.2	11.9	2[illegible].3	159.3	132.6
(9) Bl. & White	10.9	8.8	9.1*	11.9	26.2	166.4	140.4
(10) Color	10.7	8.1	7.8	12.3	25.7	156.5	129.9
(11) High Themes	12.0	11.6**	12.2**	15.2**	28.7*	196.6**	164.4**
(12) Average Themes	11.1	8.1	8.2	12.2	26.0	164.4	138.6
(13) Low Themes	8.9**	5.8**	5.1**	8.7**	23.0**	120.1**	98.7**

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 2 (continued)

Independent Variables	IQ	age in mos.
Written Sample		
(1) 4th Grade	106.8	119.8
(2) 6th Grade	105.6	143.9
(3) Male	105.1	132.3
(4) Female	107.4	131.4
(5) Specific	106.8	131.9
(6) General	105.6	131.8
(7) Concrete	107.1	131.8
(8) Abstract	105.3	131.9
(9) Bl. & White	107.1	132.0
(10) Color	105.3	131.6
(11) High Themes	114.7**	129.9
(12) Average Themes	106.7	132.4
(13) Low Themes	96.8**	132.5

* = .10 level
** = .01 level

Note: (#1-63 are Linguistic Variables)
(#64-76 are LAT Section Variables)

Table 3

LIST OF GRADE AND SEX SIGNIFICANT DIFFERENCES

(1) Girls write more words than boys, but fourth and sixth grades, as a whole, write about the same number of words. (LV 1)*

(2) Fourth graders write more sentences than sixth graders, and girls write more sentences than boys. (LV 2)

(3) Sixth graders have more words per sentence. (LV 3)

(4) Fourth graders write more T-units than sixth graders and girls write more T-units than boys. (LV 4)

(5) Sixth graders write longer T-units than fourth graders. There is no sex difference in T-unit length. (LV 5)

(6) Girls write more clauses than boys. (LV 7)

(7) Sixth graders write more clauses per T-unit than fourth graders. (LV 8)

(8) Sixth graders and girls write more subordinate clauses. (LV 9)

(9) Girls write more subordinate noun clauses than boys. (LV 13)

(10) Sixth graders write more subordinate adjective clauses (LV 14)

(11) Girls write more subordinate adverb clauses. (LV 15)

(12) Girls write more multi-clause T-units. (LV 17)

(13) Girls write more T-unit patterns. (LV 18)

(14) Sixth graders and girls use more modals. (LV 20)

(15) Girls use more infinitives. (LV 22)

(16) Girls use more coordinated verbs and nouns. (LV 23 and 24)

(17) Fourth graders and girls use more verb types (LV 24)

*Linguistic Variable #1 in Table 2

Table 3 (continued)

(18) Girls use more nouns, determiners, qualifiers, and adjectives. (LV 25, 26, 27, 28)

(19) Fourth graders and girls use more possessives. (LV 29)

(20) Girls use more adverbs. (LV 30)

(21) Sixth graders use more participial phrases. (LV 33)

(22) Girls use more prepositional phrases. (LV 34)

(23) Sixth graders use more nouns per T-unit. (LV 35)

(24) Boys use more determiners per noun. (LV 36)

(25) Girls use more adverbs of time, place, manner, other adverbs, and total adverbs. (LV 39, 40, 41, 42, 43)
Sixth graders use more adverbs of manner. (LV 41, 42)

(26) Girls use more initial adverbs, adverbs before verbs, adverbs after verbs and final adverbs. (LV 44, 45, 46, 47)
Fourth graders use more initial adverbs. (LV 44)
Sixth graders use more adverbs after verbs and more adverbs per T-unit. (LV 46, 48)

(27) Sixth graders use more -ing participle endings. (LV 52, 54)

(28) Sixth graders and girls use more adjective endings. (LV 54)

(29) Girls use more past endings. (LV 58)

(30) Girls use more suffixes. (LV 59)

(31) Girls use more form-class and function words. (LV 61, 62)

Table 4

Syntactic Deviations - 4th and 6th Grades

	Deviation Descriptor	Explanation of Deviation	4th Grade Frequency Boy	Girl	Total	6th Grade Frequency Boy	Girl	Total
1	.C	Sentence sense: The period and/or the capital is missing or inappropriately used.	85	90	175	102	63	175
2	Int. tense	Internal tense marker: Internal tense marker inappropriately used, e.g., took used for taken, seen for saw	3	1	4	3	3	6
3	Anal. tense/ number	Analogy of tense or number: Tense or number analogy inappropriately used, e.g., taked for took, mans for men	1	0	1	0	0	0
4	Prop. noun	Proper noun: Capital for proper noun inappropriately used, e.g., State for state	8	27	35	21	32	53
5	Explet. it, there	Expletive it, there: Expletive it or there omitted; it or there + V-be omitted, e.g., was a boat for it was a boat	7	5	12	7	8	15
6	Deter.	Determiner: Article a, an, the omitted or inappropriately used	8	15	23	11	13	24
7	V-be omit	Verb be omitted: Some form of the verb is omitted, e.g., she a teacher for she is a teacher.	16	7	23	2	7	9

Table 4 (continued)

Syntactic Deviations - 4th and 6th Grades

	Deviation Descriptor	Explanation of Deviation	4th Grade Frequency Boy	Girl	Total	6th Grade Frequency Boy	Girl	Total
8	V-be form	Verb be form: The form of the verb be is inappropriate, e.g., he be a farmer for he is a farmer	5	8	13	4	7	11
9	Subj. omit	Subject omitted: Subject noun or pronoun has been omitted.	5	2	7	3	3	6
10	Coord. conj.	Coordinating conjunction: coordinating conjunction (and, but etc.) omitted, inappropriate or over used	4	5	9	10	4	14
11	Tense marker	Tense marker: Tense marker, -s, -ed, omitted or improperly used, e.g., they walk for they walked.	2	7	9	7	12	19
12	Agr. marker	Agreement marker: Number marker omitted or inappropriately used, e.g., he look for he looks	10	13	23	13	10	23
13	Modal	Modal: Modal omitted or inappropriately used	1	1	2	1	0	1
14	Prog. Aspect	Progressive aspect: Progress aspect form is lacking or inappropriate, e.g., look for is looking.	4	1	5	1	1	2
15	Posses.-pl.-cont. marker	Possessive-plural-contraction marker: Possessive, plural, or contraction marker inappropriately used, e.g., color's for colors	36	27	63	25	23	48

Table 4 (continued)

Syntactic Deviations - 4th and 6th Grades

	Deviation Descriptor	Explanation of Deviation	4th Grade Frequency Boy	Girl	Total	6th Grade Frequency Boy	Girl	Total
16	Comma fault	Comma fault: Comma inappropriately used, over used, under used. Closely related to (1), sentence sense but different marker	82	74	156	55	105	160
17	Redund.	Redundancy: Words or phrases redundantly or extraneously, e.g., The man bandaged the boy's hand of the boy.	27	20	47	46	30	76
18	Pronoun form	Pronoun form: Pronoun case transformation inappropriately applied. Some form of a pronoun inappropriately used for another, e.g., Hers was first for She was first.	2	4	6	4	3	7
19	Negation application	Negation application: Negation transformation inappropriately applied. The form of negation is inappropriate or doubled, e.g., They don't have no...for They don't have any.	3	1	4	0	1	1
20	Singular-plural inversion	Singular-plural inversion: Use of sing. or plural form confused, e.g., She picked all of the flower for ...flowers.	5	5	10	4	17	21
21	Form-class markers	Form-class markers: Inability to discriminate among derivational form-class markers, e.g., He talked gentle for gently, The Japan are brave people for Japanese.	0	0	0	5	6	11
22	End punct.	End punctuation: Inappropriate end punctuation, e.g., omission of question mark.	0	0	0	2	1	3

Table 5

Lexical Deviations - 4th Grade, Boys

Boys

	Word Choice		Spelling							
	I. Lexical Ambiguity		II. Phoneme-grampheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
1	their	they're	mest	must	gril	girl	rainblow	rainbow	peloe	people
2	their	there	differant	different	hores	horse	out side	outside	stking	sticking
3	all kinds of colar cat	multi-colored cat	fly in	flying	indain	Indian	houes	houses	proporing	pumping
4	to	too	sci	ski	feild	field	bakts	basket	segerrent	cigarette
5	boot	boat	cherche	church	Ameirce	America	color full	colorful		
6	then	them	becose	because	thire	their	wher	were		
7	II reli tives	relatives	thay	they	freinds	friends	midle	middle		
8	terreblest	most terrible	raggig	ragged	thier	their	hellnents	helmets		
9	ether	other	crachs	cracks	recieve	receive	redwod	redwood		
10	a bout	about	oun	own	chiar	chair	padles	paddles		
11	shearing	sharing	tranz	trance	tow	two	where	were		

Table 5 (continued)

	Boys									
	I. Word Choice		Spelling							
	Lexical Ambiguity		II. Phoneme-grampheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
12	fatten	fountain	bumping	bumpy	polyground	playground	dosn't	doesn't		
13	there	they're	pachames	pajamas	dig	big	alot	a lot		
14	there	their	everebody	everybody			lokes	looks		
15	though	touch	slay	sleigh			crcels	circles		
16	dressed	dresser	oncover	uncover			ponts	points		
17	ade	aid	in tils	until			obelongs	oblongs		
18	of	off	curtun	curtain			rouned	round		
19	sad	said	figire	figure			withe	with		
20	meet	mutt	apon	upon			sqer	square		
21	sealing	ceiling	perachute	parachute			dodn't	don't		
22	to	two	inger	injure			probly	probably		
23	wore	war	aportment	apartment			frends	friends		
24	an	and								

Table 5 (continued)

	Boys									
	I. Word Choice		Spelling							
	Lexical Ambiguity		II. Phoneme-grapheme-Dialectic		III. Inversion Graphemes		IV. Addition-Omission of Graphemes			V. Scrambled Graphemes
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
25	by	buy	sity	city	deizy	dizzy	feld	field		
26	frame	from	kate	caught	wirling	whirling	hugary	Hungary		
27	sake	shack	his self	himself	in side	inside	wite	white		
28	binding	building	senent	cement	back ground	background	anamales	animals		
29	peace	piece			difrent	different	raceing	racing		
30	life	like			fore	for	foutain	fountain		
31	fell	feel			aginstest	against	hadly	hardly		
32	hose	house			frorist	forest	ugey	ugly		
33	thing	think			blizered	blizzard	stompped	stomped		
34	cut	cute			taling	talking	makeing	making		
35					meor	mirror	staues	statues		
36					sissors	scissors	stainglass	stained glass		
37					drempt	dreamt	mises	misses		
38					strengh	strength	wer	when		
39					tamtoes	tomatoes	kins	kinds		
40					puting	putting				

Table 6

Lexical Deviations - 4th Grade, Girls

	Girls									
	I. Word Choice		Spelling							
	Lexical Ambiguity		II. Phoneme-grapheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
1	and	an	sone	some	pertty	pretty	orang	orange	rectage	rectangula
2	an	am	botten	bottom	grils	girls	new	newly	cosinas	cousins
3	fell	feel	wather	water	thier	their	tomatos	tomatoes	choblet	chocolate
4	to	too	colos	colors	starge	strange	pupping	pumping	happynigs	happenings
5	their	there	seperated	separated	mray	many	bother	both	stigmits	stalagmite
6	setting	sitting	wooding	wooden	colthing	clothing	witing	writing	filles	flea
7	farther	father	hiching	kitchen	prttey	pretty	veary	very		
8	kings	kinds	atick	attic	solider	soldier	isen't	isn't		
9	they	there	stric	strike	shrap	sharp	waring	wearing		
10	to	two	signels	signals	olny	only	onther	other		
11	pain	pane	peenys	peonies	niose	noise	ther	there		
12	hole	whole	craching	crashing	twon	town	contry	country		
13	his	has	acked	asked	peice	piece	clouths	clothes		
14	site	suit	chear	cheer			moed	mowed		

Table 6 (continued)

	Girls									
	Word Choice		Spelling							
	I. Lexical Ambiguity		II. Phoneme-grapheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standar
15	then	them	carrits	carrots			evey	every		
16	there	their	petanias	petunias			sigle	single		
17	full	fall	sneized	sneezed			jues	juice		
18	as	or	ruend	ruined			beiry	berry		
19	where	were	fliing	flying			interresting	interesting		
20	on	one	exsept	except			tring	trying		
21	hours	horse	azident	accident			pratice	practice		
22	then	than	lookin	looking			on happy	unhappy		
23	the	they	gest	just			some one	someone		
24	go	got	throw	through			blery	bleary		
25	2	too	apon	upon			probly	probably		
26			rochs	rocks			artis	artist		
27			bumpie	bumpy			backround	background		

Table 6 (continued)

	Girls									
	I. Word Choice		Spelling							
	Lexical Ambiguity		II. Phoneme-grapheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
28							coliflower	cauliflower		
29							gloomey	gloomy		
30							quikly	quickly		
31							up side down	upside down		
32							distory	destroying		
33							dissaster	disaster		
34							finaly	finally		
35							refridger-ator	refriger-ator		
36							cloths	clothes		
37							scientst	scientists		
38							exebit	exhibit		
39							clamed	claimed		
40							presnts	presents		

Table 6 (continued)

	Girls									
	Word Choice		Spelling							
	I.		II. Phoneme-grapheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	Lexical Ambiguity		deviation		deviation		deviation		deviation	
	deviation used	standard	used	standard	used	standard	used	standard	used	standard
41							exatly	exactly		
42							hudge	huge		
43							carpert	carpet		
44							powere	powder		
45							chuches	churches		
46							up side	upside		
47							piture	picture		
48							in side	inside		
49							peple	people		
50							hidengoseck	hide-and-go-seek		
51							super	supper		

Table 7

Lexical Deviations - 6th Grade, Boys

	Word Choice		Spelling							
	I. Lexical Ambiguity		II. Phoneme-grapheme Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
1	look	like	hisself	himself	drate	dirty	gun's shots	gunshots	onger	orange
2	their	there	walken	walking	put	but	takeing	taking	furturch	future
3	throw	through	carring	carrying	brans	barns	hoding	holding		
4	off	of	charactors	characters	sied	side	on to	onto		
5	the	they	perce	purse	raido	radio	ther's	there's		
6	there	they're	fense	fence	curouis	curious	kinded	kind of		
7	than	then	closing	clothing	ligth	light	hiself	himself		
8	and	an	rases	races	rebiulding	rebuilding	dont	don't		
9	as	has	bache	batch	perpared	prepared	realy	really		
10	of	have	wis	was	feild	field	becaus	because		
11	a	of	frying	flying			alot	a lot		
12	witch	which	whut	what			woodpecer	woodpecker		
13	marry	merry	galaxie	galaxy			braches	branches		
14	ant	and	persin	person			blezar	blizzard		

Table 7 (continued)

Lexical Deviations - 6th Grade, Boys

	Word Choice		Spelling							
	I. Lexical Ambiguity		II. Phoneme-grapheme Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
15	by	buy	techture	texture			puling	pulling		
16	duty	dirty	gient	giant			rowen	wrong		
17	fled	field	thinks	things			prpel	purple		
18	cute	cut	squeen	screen			windo	window		
19	to	too	ruff	rough			fels	feels		
20	no	know	fealing	feeling			headack	headache		
21	too	two	descrasfle	disgraceful			amon	among		
22			streats	streets			chinnese	chinese		
23			orrs	oars			probly	probably		
24			sord	sort			bigest	biggest		
25			mader	matter			lookes	looks		
26			importent	important			brik	brick		
27			calender	calendar			sorda	sort of		
28			speghetti	spaghetti			in side	inside		

Table 7 (continued)

Lexical Deviations - 6th Grade, Boys

	Word Choice		Spelling									
	I. Lexical Ambiguity		II. Phoneme-grapheme Dialect		III. Inversion of Graphemes		IV. Addition-Ommision of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
29			botton	bottom			furnitur	furniture		
30			doun	down			tring	trying		
31							hopeing	hoping		
32							stripe	strip		
33							down town	downtown		
34							droor	drawer		
35							eventuly	eventually		
36							maby	maybe		
37							be hind	behind		
38							exept	except		
39							near by	nearby		
40							tringle	triangle		
41							sourt	sort		
42							tunel	tunnel		
43							siver	silver		

Table 7 (continued)

Lexical Deviations - 6th Grade, Boys

	Word Choice		Spelling							
	I. Lexical Ambiguity		II. Phoneme-grapheme Dialect		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
44							picher	picture		
45							fond	found		
46							snall	snail		
47							stiped	striped		
48							beeing	being		
49							peac	piece		
50							beutiful	beautiful		
51							houlding	holding		
52							frinds	friends		
53							smoth	smooth		
54							mosely	mostly		
55							dresed	dressed		
56							frute	fruit		
57							lemonds	lemons		

Table 7 (ctoninued)

Lexical Deviations - 6th Grade, Boys

	Word Choice									
	I. Lexical Ambiguity		II. Phoneme-grapheme Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
58							hourse	horse		
59							who ever	whoever		
60							forrest	forest		
61							quite	quit		
62							fritend	frightened		

Table 8

Lexical Deviations - 6th Grade, Girls

	Girls - 6th Grade									
	I. Word Choice		Spelling							
	Lexical Ambiguity		II. Phoneme-grapheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
1	and	at	gob	job	firends	friends	you'r	you're		
2	the	their	discribe	describe	caslte	castle	back ground	background		
3	their	they're	sceen	scene	trierad	tired	nite	night		
4	that	than	wont	want	thier	their	at myering	admiring		
5	there	their	olding	older			consiterd	considered		
6	a	are	bounching	bouncing			inasent	innocent		
7	fore	far	pome	poem			wese	worse		
8	to	too	gose	goes			Cacasons	Caucasians		
9	nows	knows	dose	does			tolte	taught		
10	ether	either	sould	should			publet	public		
11	so	some	buildins	buildings			beati	beauty		
12	pitcher	picture	picthure	picture			probly	probably		
13	tangles	triangles	dosen't	doesn't			wer	were		
14	cure	curve	adoby	adobe			mite	might		

Table 8 (continued)

Girls - 6th Grade

I.	Word Choice		Spelling							
	Lexical Ambiguity		II. Phoneme-grapheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
15	are	our	lieing	lying			toom stone	tombstone		
16	ore	or	becouse	because			prettyer	prettier		
17	fill	feel	anceres	answers			realy	really		
18	died	dead	deil	deal			pasted	passed		
19	hole	whole	exersise	exercise			biger	bigger		
20	brook	broke	exspearance	experience			nobs	knobs		
21	to	two					colard	colored		
22	mit	might					lafter	laughter		
23	were	where					quarl	quarrel		
24	live	life					what ever	whatever		
25	thing	think					vegables	vegetables		
26	thank	think					out side	outside		
27	throw	through					poke a	polka		
28	pales	pails					makeing	making		
29	nerves	nervous					mebe	maybe		

Table 8 (continued)

Girls - 6th Grade

	I. Word Choice		Spelling							
	Lexical Ambiguity		II. Phoneme-grapheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
30	buy	by					dress	dressed		
31							allways	always		
32							eatting	eating		
33							in tell	until		
34							findly	finally		
35							uncl	uncle		
36							wich	which		
37							merell	mural		
38							tiped	tipped		
39							armes	arms		
40							contrapions	contraptions		
41							cloths	clothes		
42							remmber	remember		
43							know where	nowhere		

Table 8 (continued)

Girls - 6th Grade

	I. Word Choice		Spelling							
	Lexical Ambiguity		II. Phoneme-grapheme-Dialectic		III. Inversion of Graphemes		IV. Addition-Omission of Graphemes		V. Scrambled Graphemes	
	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard	deviation used	standard
44							whodeing	holding		
45							codeboard	cardboard		
46							sometime	some time		
47							possitive	positive		
48							sedementry	sedementary		
49							takeing	taking		
50							squar	square		
51							suprize	surprize		
52							cotten	cotton		
53							on to	onto		
54							tiped	tipped		
55							abandin	abandon		
56							famlys	families		
57							staing	staying		